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EXAMINER	
LIN, KENNY S	

ART UNIT	PAPER NUMBER
2154	

DATE MAILED: 09/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/649,474	CHANG ET AL.	
	Examiner	Art Unit	
	Kenny Lin	2154	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 May 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-39* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *7/30/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-39 are presented for examination.

Claim Objections

2. Claim 1 is objected to because of the following informalities: In line 5, there exist to be an extra space in front of the word "utilizing". It needs to be deleted. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

4. Claims 1 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Ramakrishnan et al (hereinafter Ramakrishnan), US 6,114,968.

5. Ramakrishnan was cited in the previous office action.

6. As per claim 1, Ramakrishnan taught the invention as claimed including a method of coordinating slotted multiple access in a wireless network channel shared by a plurality of users comprising the steps of:

a. Assigning each of a plurality of users into a subgroup, thereby forming one or more subgroups of users, wherein each subgroup utilizes a contention mode (col.2, lines 52-54, 60-67, col.3, lines 1-26, 45-67, col.4, lines 1-3, 11-21, col.6, lines 44-47);

b. utilizing a polling mode to provide each subgroup a transmission opportunity (col.3, lines 20-26, col.5, lines 18-28, col.6, lines 48-53); and

c. utilizing a seamless transition between the polling and contention modes such that when a specific subgroup is provided a transmission opportunity and a collision occurs between user signals within the specific subgroup, the specific subgroup is split into smaller subgroups, each smaller subgroup including a portion of the users within the specific subgroup and each smaller subgroup utilizes a contention mode (col.3, lines 20-39, 45-67, col.4, lines 1-3, 11-21, col.6, lines 44-67, col.7, lines 22-39).

7. As per claim 14, Ramakrishnan taught the invention as claimed including an apparatus for coordinating slotted multiple access in a wireless network channel shared by a plurality of users comprising:

a. Means for assigning each one of a plurality of users into a subgroup, thereby forming one or more subgroups of users (col.2, lines 52-54, 60-67, col.3, lines 1-26, 45-67, col.4, lines 1-3, 11-21, col.6, lines 44-47);

b. Means for implementing a polling mode to provide each subgroup a transmission opportunity (col.3, lines 20-26, col.5, lines 18-28, col.6, lines 48-53);

c. Means for implementing a contention mode within each subgroup (col.2, lines 52-54, 60-67, col.3, lines 1-26, 45-67, col.4, lines 1-3, 11-21, col.6, lines 44-47); and

d. Means for providing a seamless transition between the polling and contention modes such that when a specific subgroup is provided a transmission opportunity and a collision occurs between user signals within the specific subgroup, the specific subgroup is split into smaller subgroups, each smaller subgroup including a portion of the user within the specific subgroup (col.3, lines 20-39, 45-67, col.4, lines 1-3, 11-21, col.6, lines 44-67, col.7, lines 22-39).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hulyalkar et al (hereinafter Hulyalkar), US 6,198,728, in view of Ramakrishnan et al (hereinafter Ramakrishnan), US 4,071,908.

10. Hulyalkar and Ramakrishnan were cited in the previous office action.

11. As per claim 27, Hulyalkar taught the invention substantially as claimed including an apparatus for coordinating slotted multiple access in a wireless network channel shared by a plurality of users (abstract, col.2, lines 57-67) comprising:

a. An ATM cube for operating a high speed wireless network consisting of a plurality of horizontal and vertical management layers (fig.2, col.4, lines 64-67, col.5, lines 1-26, it is inherent to operate network using ATM cube consisting of plurality of layers);

b. A hub for transmitting and receiving wireless network signals such that the hub may receive requests and assign portions of a communication bandwidth (col.4, lines 33-46, col.7, lines 10-23); and

c. A plurality of end user nodes for transmitting and receiving wireless network signals such that a plurality of users may request or be granted a portion of the communication bandwidth (col.3, lines 52-59, col.4, lines 33-46, col.7, lines 10-23),

12. Hulyalkar did not specifically teach that wherein the hub assigns each one of the plurality of users into a subgroup that utilizes a contention mode, and when a specific subgroup is provided a transmission opportunity according to a polling mode and a collision occurs between user signals within the specific subgroup, the hub splits the specific subgroup into smaller subgroups, each smaller subgroup including a portion of the users within the specific subgroup. Ramakrishnan taught to assign each one of the plurality of users into a subgroup that utilizes a contention mode (col.2, lines 52-54, 60-67, col.3, lines 1-26, 45-67, col.4, lines 1-3, 11-21, col.6, lines 44-47), and when a specific subgroup is provided a transmission opportunity according to a polling mode and a collision occurs between user signals within the specific subgroup, the hub splits the specific subgroup into smaller subgroups, each smaller subgroup including a portion of the users within the specific subgroup (col.3, lines 20-39, 45-67, col.4, lines 1-3, 11-21, col.5, lines 18-28, col.6, lines 44-67, col.7, lines 22-39). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Hulyalkar and Ramakrishnan because Ramakrishnan's teaching of splitting a specific subgroup into smaller subgroups in resolving collision help Hulyalkar's apparatus to properly share network communication across the network medium (Hulyalkar, col.1, lines 7-12, Ramakrishnan, col.1, lines 41-51).

13. Claims 2-9 and 15-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ramakrishnan in view of Brophy et al (hereinafter Brophy), US 4,071,908.

14. Brophy was cited in the previous office action.

15. As per claims 2 and 15, Ramakrishnan taught the invention substantially as claimed in claims 1 and 14. Ramakrishnan did not specifically teach to assign address from an address pool. Brophy taught to polling method where each of a plurality of users is initially assigned a distinct address from an address pool (col.1, lines 60-67, col.2, lines 1-2, 43-46). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the Ramakrishnan and Brophy's teachings since the operations of polling and contention modes requires the user nodes to first be assigned with addresses.

16. As per claims 3 and 16, Ramakrishnan and Brophy taught the invention substantially as claimed in claims 2 and 15. Brophy further taught that the address pool contains 2^k addresses, the maximum number of users within one channel (col.3, lines 54-56). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the Ramakrishnan and Brophy's teachings since the operations of polling and contention modes requires the user nodes to first be assigned with addresses.

17. As per claims 4 and 17, Ramakrishnan and Brophy taught the invention substantially as claimed in claims 2 and 15. Brophy further taught dynamically splitting the address pool into 2^x subgroups (col.2, lines 46-53, col.3, lines 54-56). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the Ramakrishnan and Brophy's teachings since the operations of polling and contention modes requires the user nodes to first be assigned with addresses.

18. As per claims 5 and 18, Ramakrishnan and Brophy taught the invention substantially as claimed in claims 4 and 17. Ramakrishnan further taught to transmit only the users belonging to a specific subgroup at any transmission opportunity (col.3, lines 20-34)

19. As per claims 6 and 19, Ramakrishnan and Brophy taught the invention substantially as claimed in claims 5 and 18. Brophy further taught that starting of a multiple access cycle where x could be any number from 0 to k (col.3, lines 54-56). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the Ramakrishnan and Brophy's teachings since the operations of polling and contention modes requires the user nodes to first be assigned with addresses.

20. As per claims 7 and 20, Ramakrishnan and Brophy taught the invention substantially as claimed in claims 6 and 19. Ramakrishnan and Brophy did not specifically teach that the contention mode occurs when x=0 and only one subgroup exists allowing every user to transmit. However, it would have been obvious to us contention mode to transmit when there is only one group of users. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ contention-based approach in Ramakrishnan and Brophy's method since there exists only one group of users for transmission.

21. As per claims 8 and 21, Ramakrishnan and Brophy taught the invention substantially as claimed in claims 6 and 19. Brophy further taught that the polling mode occurs when x=k and there are 2^k subgroups containing only one user (col.3, lines 41-44, 54-56). It would have been

obvious to one of ordinary skill in the art at the time the invention was made to combine the Ramakrishnan and Brophy's teachings since the operations of polling and contention modes requires the user nodes to first be assigned with addresses.

22. As per claims 9 and 22, Ramakrishnan and Brophy taught the invention substantially as claimed in claims 6 and 19. Ramakrishnan and Brophy did not specifically teach that the seamless transition between the polling mode and the contention mode occurs by changing the x parameter. However, it would have been obvious to transit between the modes depending on the number of subgroups there are for transmission. It would have been obvious to one of ordinary skill in the art at the time the invention was made to perform transition by changing x parameter where it determines the number of subgroups in Ramakrishnan and Brophy's method.

23. Claims 10-13 and 23-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ramakrishnan as applied to claims 1 and 14 above, and further in view of Lee, US 5,892,769.

24. Lee was cited in the previous office action.

25. As per claims 10 and 23, Ramakrishnan taught the invention substantially as claimed in claims 1 and 14. Ramakrishnan did not specifically teach to applying a contention resolution algorithm when a user signal collides with another. However, Ramakrishnan taught to provide resolution when collisions happened (col.2, lines 60-65, col.3, lines 66-67, col.4, lines 1-3). Lee taught to use a contention resolution algorithm to resolve collisions (abstract). It would have

been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Ramakrishnan and Lee because Lee's teaching of using a contention resolution algorithm to resolve signal collisions help to ensure that the transmitted packet is received in Ramakrishnan's method.

26. As per claims 11 and 24, Ramakrishnan and Lee taught the invention substantially as claimed in claims 10 and 23. Lee further taught that when a collision occurs between two users the subgroup x will be split into two subgroups (x=x+1), both subgroups containing half the number of users in the parent groups (col.2, lines 30-40). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Ramakrishnan and Lee because Lee's teaching of using a contention resolution algorithm to resolve signal collisions help to ensure that the transmitted packet is received in Ramakrishnan's method.

27. As per claims 12 and 25, Ramakrishnan and Lee taught the invention substantially as claimed in claims 10 and 23. Lee further taught that when another collision between two user signals occurs, the subgroup will again split (col.2, lines 30-47). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Ramakrishnan and Lee because Lee's teaching of using a contention resolution algorithm to resolve signal collisions help to ensure that the transmitted packet is received in Ramakrishnan's method.

28. As per claims 13 and 26, Ramakrishnan and Lee taught the invention substantially as claimed in claims 10 and 23. Lee further taught that when collisions no longer occur in any subgroup, the multiple access cycle ends and a new cycle begins (col.2, lines 30-49). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Ramakrishnan and Lee because Lee's teaching of using a contention resolution algorithm to resolve signal collisions help to ensure that the transmitted packet is received in Ramakrishnan's method.

29. Claims 28-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hulyalkar and Ramakrishnan in view of Brophy et al (hereinafter Brophy), US 4,071,908.

30. As per claim 28, Hulyalkar and Ramakrishnan taught the invention substantially as claimed in claim 27. Hulyalkar and Ramakrishnan did not specifically teach to assign address from an address pool. Brophy taught to polling method where each of a plurality of users is initially assigned a distinct address from an address pool (col.1, lines 60-67, col.2, lines 1-2, 43-46). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the Hulyalkar, Ramakrishnan and Brophy's teachings since the operations of polling and contention modes requires the user nodes to first be assigned with addresses.

31. As per claim 29, Hulyalkar, Ramakrishnan and Brophy taught the invention substantially as claimed in claim 28. Brophy further taught that the address pool contains 2^k addresses, the maximum number of users within one channel (col.3, lines 54-56). It would have been obvious

to one of ordinary skill in the art at the time the invention was made to combine the Hulyalkar, Ramakrishnan and Brophy's teachings since the operations of polling and contention modes requires the user nodes to first be assigned with addresses.

32. As per claim 30, Hulyalkar, Ramakrishnan and Brophy taught the invention substantially as claimed in claim 28. Brophy further taught dynamically splitting the address pool into 2^x subgroups (col.2, lines 46-53, col.3, lines 54-56). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the Hulyalkar, Ramakrishnan and Brophy's teachings since the operations of polling and contention modes requires the user nodes to first be assigned with addresses.

33. As per claim 31, Hulyalkar, Ramakrishnan and Brophy taught the invention substantially as claimed in claim 30. Ramakrishnan further taught to transmit only the users belonging to a specific subgroup at any transmission opportunity (col.3, lines 20-34)

34. As per claim 32, Hulyalkar, Ramakrishnan and Brophy taught the invention substantially as claimed in claim 31. Brophy further taught that starting of a multiple access cycle where x could be any number from 0 to k (col.3, lines 54-56). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the Hulyalkar, Ramakrishnan and Brophy's teachings since the operations of polling and contention modes requires the user nodes to first be assigned with addresses.

35. As per claim 33, Hulyalkar, Ramakrishnan and Brophy taught the invention substantially as claimed in claim 32. Hulyalkar, Ramakrishnan and Brophy did not specifically teach that the contention mode occurs when x=0 and only one subgroup exists allowing every user to transmit. However, it would have been obvious to us contention mode to transmit when there is only one group of users. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ contention mode in Hulyalkar, Ramakrishnan and Brophy's method since there exists only one group of users for transmission.

36. As per claim 34, Hulyalkar, Ramakrishnan and Brophy taught the invention substantially as claimed in claim 32. Brophy further taught that the polling mode occurs when x=k and there are 2^k subgroups containing only one user (col.3, lines 41-44, 54-56). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the Hulyalkar, Ramakrishnan and Brophy's teachings since the operations of polling and contention modes requires the user nodes to first be assigned with addresses.

37. As per claim 35, Hulyalkar, Ramakrishnan and Brophy taught the invention substantially as claimed in claim 32. Hulyalkar, Ramakrishnan and Brophy did not specifically teach that the seamless transition between the polling mode and the contention mode occurs by changing the x parameter. However, it would have been obvious to transit between the modes depending on the number of subgroups there are for transmission. It would have been obvious to one of ordinary skill in the art at the time the invention was made to perform transition by changing x parameter where it determines the number of subgroups in Hulyalkar, Ramakrishnan and Brophy's method.

38. Claims 36-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hulyalkar and Ramakrishnan as applied to claim 27 above, and further in view of Lee, US 5,892,769.

39. As per claim 36, Hulyalkar and Ramakrishnan taught the invention substantially as claimed in claim 27. Hulyalkar and Ramakrishnan did not specifically teach to applying a contention resolution algorithm when a user signal collides with another. However, Hulyalkar and Ramakrishnan taught to provide resolution when collisions happened (Hulyalkar, col.2, lines 42-56, col.7, lines 41-47, Ramakrishnan, col.2, lines 60-65, col.3, lines 66-67, col.4, lines 1-3). Lee taught to use a contention resolution algorithm to resolve collisions (abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Hulyalkar, Ramakrishnan and Lee because Lee's teaching of using a contention resolution algorithm to resolve signal collisions help to ensure that the transmitted packet is received in Hulyalkar and Ramakrishnan's method.

40. As per claim 37, Hulyalkar, Ramakrishnan and Lee taught the invention substantially as claimed in claim 36. Lee further taught that when a collision occurs between two users the subgroup x will be split into two subgroups (x=x+1), both subgroups containing half the number of users in the parent groups (col.2, lines 30-40). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Hulyalkar, Ramakrishnan and Lee because Lee's teaching of using a contention resolution algorithm to resolve signal collisions help to ensure that the transmitted packet is received in Hulyalkar and Ramakrishnan's method.

41. As per claim 38, Hulyalkar, Ramakrishnan and Lee taught the invention substantially as claimed in claim 36. Lee further taught that when another collision between two user signals occurs, the subgroup will again split (col.2, lines 30-47). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Hulyalkar, Ramakrishnan and Lee because Lee's teaching of using a contention resolution algorithm to resolve signal collisions help to ensure that the transmitted packet is received in Hulyalkar and Ramakrishnan's method.

42. As per claim 39, Hulyalkar, Ramakrishnan and Lee taught the invention substantially as claimed in claim 36. Lee further taught that when collisions no longer occur in any subgroup, the multiple access cycle ends and a new cycle begins (col.2, lines 30-49). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Hulyalkar, Ramakrishnan and Lee because Lee's teaching of using a contention resolution algorithm to resolve signal collisions help to ensure that the transmitted packet is received in Hulyalkar and Ramakrishnan's method.

Response to Arguments

43. Applicant's arguments filed on 5/17/2004 have been fully considered but they are not persuasive.

44. In the remark, applicant argued that (1) Ramakrishnan does not teach that each subgroup utilizes a contention mode and that if a collision occurs, each smaller subgroup split from the specific subgroup also utilizes contention mode.

45. Examiner traverses the argument that:

As to point (1), The examiner has cited new columns and lines in Ramakrishnan reference to further point out the claimed limitation. Ramakrishnan taught a determining logic in instructing subgroups to utilize contention mode where the users in the contention mode subgroup is listed as inactive in the contention poll list if the subgroup has no current transmission activity (col.3, lines 3-26, 45-67, col.4, lines 1-3, 11-21). Ramakrishnan further taught that when a transmission opportunity is granted to a specific subgroup utilizing contention mode and collision occurs; the specific subgroup is split into smaller subgroups (col.6, lines 44-67) and determining logic is ran to instruct the smaller subgroups to utilize contention mode (col.7, lines 22-39). This clears read on the claim language where say "wherein each subgroup utilizes a contention mode" and "each smaller subgroup utilizes a contention mode".

Conclusion

46. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Varma et al, US 6,275,497.

47. A shortened statutory period for reply to this Office action is set to expire THREE MONTHS from the mailing date of this action.

48. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenny Lin whose telephone number is (703) 305-0438. The examiner can normally be reached on 8 AM to 5 PM Tue.-Fri. and every other Monday..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Follansbee can be reached on (703) 305-8498. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ksl
September 8, 2004

Glen Jar Li
9/8/04